

PCT

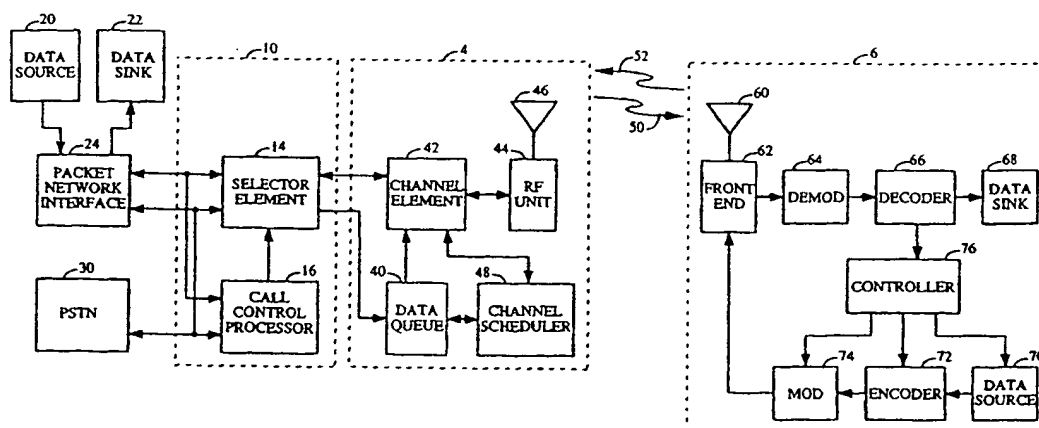
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INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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(21) International Application Number: PCT/US98/23428 (22) International Filing Date: 3 November 1998 (03.11.98) (30) Priority Data: 08/963,386 3 November 1997 (03.11.97) US (71) Applicant: QUALCOMM INCORPORATED [US/US]; 6455 Lusk Boulevard, San Diego, Ca 92121 (US). (72) Inventors: PADOVANI, Roberto; 13593 Penfield Point, San Diego, CA 92130 (US). SINDHUSHAYANA, Nagabhushana, T.; 10635 Dabney Drive #63, San Diego, CA 92126 (US). WHEATLEY, Charles, E., III; 2208 Camino Del Barco, Del Mar, CA 92014 (US). BENDER, Paul, E.; 2879 Angell Avenue, San Diego, CA 92122 (US). BLACK, Peter, J.; Apartment 258, 8558 Villa La Jolla Drive, La Jolla, CA 92037 (US). GROB, Matthew; 2757 Bordeaux Avenue, La Jolla, CA 92037 (US). HINDERLING, Jurg, K.; 4655 Serenata Place, San Diego, CA 92130 (US). (74) Agents: OGROD, Gregory, D. et al.; Qualcomm Incorporated, 6455 Lusk Boulevard, San Diego, CA 92121 (US).			(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, HR, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG). Published <i>With international search report.</i> (88) Date of publication of the international search report: 8 July 1999 (08.07.99)

(54) Title: METHOD AND APPARATUS FOR HIGH RATE PACKET DATA TRANSMISSION



(57) Abstract

In a data communication system capable of variable rate transmission, high rate packet data transmission improves utilization of the forward link and decreases the transmission delay. Data transmission on the forward link is time multiplexed and the base station transmits at the highest data rate supported by the forward link at each time slot to one mobile station. The data rate is determined by the largest C/I measurement of the forward link signals as measured at the mobile station. Upon determination of a data packet received in error, the mobile station transmits a NACK message back to the base station. The NACK message results in retransmission of the data packet received in error. The data packets can be transmitted out of sequence by the use of sequence number to identify each data unit within the data packets.

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INTERNATIONAL SEARCH REPORT

International Application No
PCT/US 98/23428

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 H04Q7/22

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 H04Q H04L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 96 10320 A (NOKIA TELECOMMUNICATIONS OY ;HAEMAELEINEN JARI (FI); VAINIKKA JAR) 4 April 1996	54
A	see page 11, line 16 - page 12, line 17 ---	1,38
A	US 5 638 412 A (TIEDEMANN JR EDWARD G ET AL) 10 June 1997 see column 4, line 39 - column 5, line 50 ---	1,38,49, 54
A	EP 0 779 755 A (NIPPON TELEGRAPH & TELEPHONE) 18 June 1997 see page 5, line 19 - page 5, line 28 -----	1,38,49

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents:

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E earlier document but published on or after the international filing date

L document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

O document referring to an oral disclosure, use, exhibition or other means

P document published prior to the international filing date but later than the priority date claimed

T later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

X document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

Y document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

G document member of the same patent family

Date of the actual completion of the international search

Date of making of the international search report

10 February 1999

07.05.1999

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 98/23428

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-55

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

1. Claims: 1-55

An apparatus and method for selecting a base station on the basis of the measured C/I and transmitting a data request to said base station defining the transmission rate to be used.

2. Claims: 56-63

A variable rate transmitter for encoding and modulating data for transmission.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 98/23428

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 9610320 A	04-04-96	FI 96557 B	29-03-96
		AU 701594 B	04-02-99
		AU 3523995 A	19-04-96
		CA 2200308 A	04-04-96
		EP 0783826 A	16-07-97
		FI 971269 A	26-03-97
		JP 10511818 T	10-11-98

US 5638412 A	10-06-97	AU 685648 B	22-01-98
		AU 2863695 A	05-01-96
		BR 9505489 A	20-08-96
		CN 1129507 A	21-08-96
		EP 0719491 A	03-07-96
		FI 960195 A	15-01-96
		JP 9502075 T	25-02-97
		WO 9535002 A	21-12-95
		US 5818871 A	06-10-98

EP 0779755 A	18-06-97	JP 9224276 A	26-08-97
		CA 2192925 A	14-06-97
		US 5832368 A	03-11-98
